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## Brief Report

# Challenges experienced by U.S. K-12 public schools in serving students with special education needs or underlying health conditions during the COVID-19 pandemic and strategies for improved accessibility



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## ARTICLE INFO

## Article history:

Received 14 September 2022

Received in revised form

29 November 2022

Accepted 6 December 2022

## Keywords:

COVID-19

Disabilities

K-12

Accessibility

Challenges

## ABSTRACT

**Background:** Students with special education needs or underlying health conditions have been disproportionately impacted (e.g., by reduced access to services) throughout the COVID-19 pandemic.

**Objective:** This study describes challenges reported by schools in providing services and supports to students with special education needs or underlying health conditions and describes schools' use of accessible communication strategies for COVID-19 prevention.

**Methods:** This study analyzes survey data from a nationally representative sample of U.S. K-12 public schools (n = 420, February–March 2022). Weighted prevalence estimates of challenges in serving students with special education needs or underlying health conditions and use of accessible communication strategies are presented. Differences by school locale (city/suburb vs. town/rural) are examined using chi-square tests.

**Results:** The two most frequently reported school-based challenges were staff shortages (51.3%) and student compliance with prevention strategies (32.4%), and the two most frequently reported home-based challenges were the lack of learning partners at home (25.5%) and lack of digital literacy among students' families (21.4%). A minority of schools reported using accessible communications strategies for COVID-19 prevention efforts, such as low-literacy materials (7.3%) and transcripts that accompany podcasts or videos (6.7%). Town/rural schools were more likely to report non-existent or insufficient access to the internet at home and less likely to report use of certain accessible communication than city/suburb schools.

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**Conclusion:** Schools might need additional supports to address challenges in serving students with special education needs or with underlying health conditions and improve use of accessible communication strategies for COVID-19 and other infectious disease prevention.

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The COVID-19 pandemic impacted the lives of students through disruptions to typical in-person school and household routines. Approximately 15% of public school students received special education services in 2020–2021 and over 40% of school-children and adolescents have at least one chronic health condition, such as asthma or obesity.<sup>1,2</sup> The Individuals with Disabilities Education Act (IDEA) in K-12 public schools addresses nine categories of disabilities, with specific learning disabilities, speech or language impairment, and other health impairments (e.g., limited strength, vitality, or alertness due to chronic health problems such as a heart condition or epilepsy) being the most prevalent.<sup>1</sup> As a result of the COVID-19 pandemic, students with disabilities or with underlying health conditions have experienced numerous challenges, including reduced or loss of services and supports, issues with access to remote learning, and lack of home-based support.<sup>3–5</sup> Although virtual learning afforded students with health needs and disabilities the continuity of an education during the pandemic, the quality of virtual supports may have been reduced by lack of resources and insufficient training and technology access.<sup>6</sup> Through lessons learned from the COVID-19 pandemic, school districts have an opportunity to improve virtual supports by investing time and resources into planning, training special education staff in the delivery of virtual based supports, and enhancing technology access, to benefit these populations now and during future public health emergencies.

In August 2022, the U.S. Centers for Disease Control and Prevention (CDC) released updated guidance for schools to promote safe, in-person instruction and recommended COVID-19 prevention strategies based on local context.<sup>7</sup> This guidance included special considerations for people at risk of severe illness from COVID-19. Students with certain disabilities or underlying health conditions might be at increased risk of severe COVID-19 illness or might experience unique challenges to using prevention strategies. For example, children with autism or hearing loss might have difficulty adhering to mask requirements, and children with intellectual and developmental disabilities and children with medical complexity are at increased risk of severe COVID-19 outcomes.<sup>8,9</sup> Special considerations apply to these populations to promote safe inclusion in schools and ensure continuity of education and services. Such considerations emphasize modified strategies to meet the needs of students receiving special education services and protections for students at risk of severe COVID-19 illness or with family members with similar risks.

Guidance also underscores the importance of communicating about COVID-19 prevention using accessible communication strategies.<sup>7</sup> For example, schools have been encouraged to share information about vaccines tailored to those with limited English proficiency (LEP) and those with disabilities that could require modified formats to support accessibility (e.g., print or electronic material written in plain language and translated into multiple languages; materials accessible to screen readers). However, little is known about the challenges schools experienced during the pandemic in serving students with disabilities or with underlying health conditions or schools' uptake of accessible communication strategies in their COVID-19 prevention efforts.

Accordingly, using data from a nationally representative sample

of U.S. K-12 public schools, this study aims to describe 1) challenges in serving students in school or home settings with disabilities or underlying health conditions; and 2) use of accessible communication strategies to convey COVID-19 prevention efforts.

## Methods

### Data

CDC initiated the National School COVID-19 Prevention Study (NSCPS) to better understand schools' experiences throughout the COVID-19 pandemic.<sup>10</sup> NSCPS involved five survey waves administered June 2021–May 2022 to a nationally representative sample of K-12 public schools. The sampling frame (i.e., a list of all public schools in the 50 states and the District of Columbia) used Common Core Data from the National Center for Education Statistics (NCES) and the MDR database.<sup>11</sup> Excluded from the sampling frame were schools that were private, alternative, run by the U.S. Department of Defense, had fewer than 30 students, or provided services to a “pull-out” population in another eligible school.

The sample was stratified based on school level (elementary, middle, high), NCES school locale (city, suburb, town, rural), and region (Northeast, South, Midwest, West). For each survey wave, we invited the entire sample of 1602 schools, excluding schools which explicitly refused participation. Schools that did not participate in one survey wave were still eligible to participate in subsequent waves. For each wave, participants were contacted by phone calls and emails, and those who agreed to participate were emailed a unique survey link to complete the survey online. Respondents were school principals or designees familiar with schools' COVID-19 policies and practices (e.g., assistant principals, school nurses). Data for this study came from Wave 4 (February 14–March 27, 2022,  $n = 420$ , response rate = 26%), and included a one-time module assessing challenges schools experienced in serving students who receive special education services or have underlying health conditions, as well as accessible communication strategies schools implemented. Respondents were primarily principals ( $n = 307$ ), followed by school nurses ( $n = 53$ ), and other school-level designees ( $n = 39$ ). This study is part of a larger data collection effort to characterize schools' responses to the COVID-19 pandemic; additional details about the NSCPS can be found elsewhere.<sup>10,12</sup>

### Measures

We assessed challenges that schools experienced in providing services and related supports or accommodations since the start of the 2021–2022 school year to students who receive special education services or those with underlying health conditions as a proxy to identify students who might face barriers to implementing prevention strategies or who are at increased risk of severe COVID-19 illness.<sup>13</sup> We used two “mark all that apply” survey questions listing potential challenges. We assessed five school-based challenges (barriers presented by the school's physical infrastructure; lack of time to prepare and implement preventive measures; students' difficulties following COVID-19 prevention strategies; staff

difficulties following COVID-19 prevention strategies; and staff shortages) and five home-based challenges (non-existent or insufficient home internet access; lack of learning partners or coaches; lack of digital literacy among students' families; difficulty in providing families with technology support; and difficulty in communicating with families). Additionally, schools reported accessible communication strategies used for COVID-19 prevention, such as visual messaging, translation into other needed languages, and auditory messages with a separate "mark all that apply" survey question. See [Appendix 1](#) for exact question wording and response options. The NCES school locale, an urban-rural school-level classification scheme, was linked to survey data.<sup>14</sup> Due to small sample sizes, we combined "city" and "suburb" locales and "town" and "rural" locales.

### Statistical analyses

Analyses used survey weights that accounted for survey nonresponse and the design strata. We present weighted prevalences and 95% confidence intervals (CI) of challenges and the strategies among K-12 public schools, and by locale, suppressing estimates with a relative standard error > 30%. Chi-square tests were used to test for differences in the prevalence of challenges and strategies by locale. *P*-values <0.05 were considered statistically significant. Analyses were conducted using R (version 4.1.2; R Foundation).

## Results

The participating sample was diverse in terms of school level (elementary = 234, middle = 100, high = 86), region (Northeast = 67, Midwest = 125, South = 131, West = 97), and school locale (city = 81, suburb = 129, town = 58, and rural = 125). Weighted prevalences of school- and home-based challenges and use of accessible communication strategies among K-12 public schools are presented in [Table 1](#). For school-based challenges in providing services and related supports or accommodations to students receiving special education or with underlying health conditions, over half of schools reported staff shortages (51.3%) and almost a third reported difficulty in having students follow COVID-19 prevention strategies (32.4%). Other less frequent challenges included barriers presented by physical infrastructure (e.g., insufficient space to support podding or cohorting) (15.6%), lack of time to prepare and implement prevention strategies (7.2%), and difficulty in having staff follow COVID-19 prevention strategies (7.1%).

For home-based challenges, over a fifth of schools reported lack of learning partners or coaches (25.5%) and lack of digital literacy among students' families (21.4%). Additional home-based challenges include non-existent or insufficient home internet access (18.8%), difficulty in communication with families (14.8%), and difficulty in providing families with technology support (13.0%). Finally, 16.5% of respondents reported lack of knowledge about home-based challenges experienced by these students.

The three most frequently reported accessible communication strategies for COVID-19 prevention were translation into other languages (48.4%), visual messaging (45.8%), and auditory messages (42.2%). The three least frequently reported were American Sign Language (3.9%), transcripts that accompany podcasts or videos (6.7%), and low-literacy materials (7.3%).

[Table 2](#) presents challenges and strategies by school locale. Compared to city/suburb schools, town/rural schools were more likely to experience non-existent or insufficient home internet access (14.8% vs. 23.9%, *p* = 0.04). No other challenges significantly differed by school locale. In terms of accessible communication

strategies, town/rural schools were less likely than city/suburb schools to report translation into other languages (60.1% vs. 34.8%, *p* < 0.001) and visual messaging (54.2% vs. 35.0%, *p* = 0.001). Compared to city/suburb schools, town/rural schools were more likely to lack accessible communication strategies (8.3% vs. 22.1%, *p* < 0.001).

## Discussion

This study provides insight on home- and school-based challenges schools experienced in serving students who receive special education services or with underlying health conditions using nationally representative data on K-12 public schools. The most frequently reported school-based challenge was staff shortages; this was the only challenge in this study reported by more than half of the schools and aligns with research highlighting staff shortage problems in school settings.<sup>15,16</sup> Students who receive special education services or have underlying health conditions, in particular, might require dedicated support from staff (e.g., paraprofessionals who provide 1-1 support) and might be more acutely impacted by staff shortages.<sup>17,18</sup> Staff shortages might have also contributed to schools' inability to provide adequate virtual supports and accommodations.<sup>3</sup> A frequently reported home-based challenge, and the only challenge in the study to differ significantly by school locale, was non-existent or insufficient home internet access. Schools often rely on web-based platforms to deliver communication and educational materials, and many relied on remote instruction during the pandemic. However, the lack of stable internet access might have posed a barrier to maintaining continuity in communication and meeting the needs of these student populations.<sup>19</sup> As previously documented for low SES communities, our findings suggest town/rural schools experienced greater challenges in internet access.<sup>20–24</sup> As schools continue to navigate the COVID-19 pandemic, and prepare for local outbreaks of other infectious diseases, addressing internet and technology barriers with Wi-Fi hotspots and other equipment to support student populations is important. Moreover, schools might need more staff and resources to address challenges reported by populations that receive special education services or have underlying health conditions, such as lack of learning partners and digital literacy among students' families. Concerningly, almost 17% of schools reported that they did not know what home-based challenges were experienced by these populations, underscoring the importance of communication between students, staff, and families.<sup>25–27</sup>

Clear and timely communication between schools and families is critical during public health emergencies. Information on how to prevent the spread of COVID-19 and other diseases is key in educating and empowering all students and their families. Although schools reported several different communication strategies to share COVID-19 information, the prevalence of schools using accessible communication strategies was low overall. For example, only about 7% of schools reported using low-literacy materials in communicating about COVID-19. Several resources and guidance documents are available to help make health communication materials easy to understand for different audiences.<sup>28–30</sup> Schools can also use the CDC Clear Communication Index to assess the effectiveness of their health communication materials.<sup>31</sup> This index aims to assist in the development of clear messages that aid public understanding. Additionally, translation of materials into other languages can help ensure key information reaches all students and families. Community partners who provide support (e.g., community health partners, faith-based organizations) and understand the beliefs and practices within the community can be included when developing communication plans for schools.<sup>32</sup>

**Table 1**

School- and home-based challenges in providing services to students who receive special education services or students with underlying health conditions and accessible communication strategies used in COVID-19 prevention among K-12 public schools – National School COVID-19 Prevention Study, United States, February–March 2022.

Experience or strategy	% (95% CI) <sup>a</sup>
<b>School-based challenges<sup>b</sup></b>	
Barriers presented by the school's physical infrastructure	15.6 (12.1–20.0)
Lack of time to prepare and implement COVID-19 preventive Measures	7.2 (4.8–10.6)
Difficulty in having students follow COVID-19 prevention strategies	32.4 (27.6–37.4)
Difficulty in having school and support staff follow COVID-19 prevention strategies	7.1 (4.8–10.5)
Staff shortages	51.3 (45.9–56.6)
None	28.7 (24.3–33.6)
Don't know	9.0 (6.5–12.4)
<b>Home-based challenges<sup>c</sup></b>	
Non-existent or insufficient access to the internet at home	18.8 (15.0–23.3)
Lack of learning partners or coaches at home	25.5 (21.1–30.4)
Lack of digital literacy among students' families	21.4 (17.5–25.9)
Difficulty in providing families with technology support	13.0 (9.7–17.1)
Difficulty in communicating with families	14.8 (11.5–18.9)
None	42.7 (37.4–48.1)
Don't know	16.5 (13.0–20.7)
<b>Accessible communication strategies used in COVID-19 prevention<sup>d</sup></b>	
American Sign Language	3.9 (2.2–6.9)
Translation into the main languages used by families in schools	48.4 (43.4–53.4)
Auditory messages	42.2 (37.3–47.3)
Low-literacy materials	7.3 (4.9–10.7)
Visual messaging	45.8 (40.4–51.2)
Image descriptors (or "alt-text")	12.9 (9.6–17.2)
Captions to videos on school webpages or social media sites	12.7 (9.7–16.5)
Transcripts that accompany podcasts or videos	6.7 (4.4–10.1)
None	14.2 (10.8–18.3)
Don't know	13.1 (9.9–17.1)

Note: CI = Confidence interval.

<sup>a</sup> Weighted percentages and 95% CIs are presented. The prevalence of responses where the relative standard error was >30% were not presented. For school-based challenges this included: "Lack of personal protective equipment (e.g., masks, face shields)"; "Lack of suitable computer hardware and software technology to support students' remote learning (e.g., assistive technology tools, adaptive technology tools)". For accessible communication strategies, this included "Braille".

<sup>b</sup> Question asked, "Since the start of the 2021–2022 school year, which of the following school-based challenges is your school experiencing in providing services and related supports or accommodations to students who receive special education services or students with underlying health conditions that place them at greater risk of severe illness and complications from COVID-19 (e.g., asthma, immunosuppression)?"

<sup>c</sup> Question asked, "Since the start of the 2021–2022 school year, which of the following challenges related to students' home environment is your school experiencing in providing services and related supports or accommodations to students who receive special education services or students with underlying health conditions that place them at greater risk of severe illness and complications from COVID-19 (e.g., asthma, immunosuppression)?"

<sup>d</sup> Question asked, "Since the start of the COVID-19 pandemic, what types of accessible communication strategies has your school used with students or their families to prevent the spread of COVID-19?"

Results also suggest underuse of accessible communication strategies such as American Sign Language and captioning which could have benefitted students and families. For students with disabilities or underlying health conditions at increased risk or with additional barriers to using prevention strategies, this communication is needed to make individualized determinations and ensure equal access to health and educational services.<sup>33</sup> Although our study did not provide data on students' specific accessibility related needs, given that 15% of the student population has a documented disability, it is likely that some of these strategies could have helped bridge potential communication gaps.<sup>1</sup> Almost one third of schools reported challenges in having these student populations follow COVID-19 prevention strategies, although we are not able to discern whether this was due to low overall compliance or disability-related challenges. Nonetheless, this underscores the importance of clear and accessible health communication messages. Given that town/rural schools were less likely to use accessible communication strategies compared to city/suburb schools, town/rural schools might need additional supports in developing and using such strategies. Additional training on developing materials that incorporate accessible communication strategies may be needed.<sup>19,34</sup> State and local education agencies and teachers can collaborate to develop training on accessible communication

strategies, digital tools and evidence-based instructional methods such as Universal Design for Learning (UDL) that promote accessibility for all learners.<sup>6,35–37</sup>

This study has several limitations. First, the data represented only the perspective of school administrators and might be influenced by social desirability bias or limits on respondents' knowledge of the assessed challenges and strategies. Second, the survey response rate was low (26%) but our analyses incorporated weights which accounted for nonresponse. Third, our sample was small. Fourth, we did not collect data on the distribution of disabilities and underlying health conditions among the students and families in sampled schools, nor on the specific special education services that these schools delivered, prohibiting us from examining differences by these school characteristics. Fifth, the school- and home-based challenges and accessible strategies assessed in the survey were not exhaustive.

## Conclusions

Schools experienced numerous school- and home-based challenges in serving students who receive special education services or who have underlying health conditions during the COVID-19 pandemic. Key school-based challenges included staff shortages

**Table 2**

School and home-based challenges in providing services to students who receive special education services or students with underlying health conditions and accessible communication strategies used in COVID-19 prevention by NCES school locale: National School COVID-19 Prevention Study, United States, February–March 2022.

	NCES school locale <sup>a</sup>		p-value <sup>c</sup>
	City/Suburb % (95% CI) <sup>b</sup>	Town/Rural % (95% CI) <sup>b</sup>	
<b>School-based challenges<sup>d</sup></b>			
Barriers presented by the school's physical Infrastructure	16.9 (12.0–23.2)	13.5 (8.6–20.6)	0.42
Lack of time to prepare and implement preventive Measures	8.2 (4.9–13.4)	– <sup>e</sup>	
Difficulty in having students follow COVID-19 prevention strategies	32.4 (26.1–39.4)	33.3 (25.6–42.0)	0.87
Difficulty in having school and support staff follow COVID-19 prevention strategies	6.7 (3.8–11.6)	7.0 (3.9–12.3)	0.92
Staff shortages	55.0 (47.3–62.5)	49.9 (41.6–58.2)	0.37
Lack of software and hardware technology	– <sup>e</sup>	– <sup>e</sup>	
None	25.0 (19.3–31.7)	30.4 (23.1–38.8)	0.29
Don't Know	9.5 (6.1–14.5)	8.6 (5.0–14.5)	0.78
<b>Home-based challenges<sup>f</sup></b>			
Non-existent or insufficient access to the internet at Home	14.8 (10.1–21.0)	23.9 (17.6–31.6)	0.04
Lack of learning partners or coaches at home	23.9 (18.1–30.9)	28.1 (21.0–36.5)	0.41
Lack of digital literacy among students' families	22.8 (17.7–28.8)	16.3 (10.9–23.6)	0.14
Difficulty in providing families with technology Support	12.7 (8.4–18.9)	13.7 (8.8–20.7)	0.81
Difficulty in communicating with families	16.5 (11.7–22.7)	11.9 (7.6–18.2)	0.23
None	45.3 (38.1–52.7)	40.6 (32.3–49.5)	0.42
Don't Know	15.9 (11.4–21.7)	16.8 (11.5–24.0)	0.82
<b>Accessible communication strategies used in COVID-19 prevention<sup>g</sup></b>			
Translation into the main languages used by families in schools	60.1 (53.0–66.7)	34.8 (27.7–42.7)	<0.001
Auditory messages	45.5 (38.8–52.4)	39.8 (31.8–48.4)	0.30
Low literacy materials	– <sup>e</sup>	11.5 (7.0–18.3)	
Visual messaging	54.2 (46.3–61.8)	35.0 (27.5–43.3)	0.001
Image descriptors (or "alt-text")	16.3 (11.2–23.0)	– <sup>e</sup>	
Captions to videos on school webpages or social media sites	14.1 (9.8–19.8)	12.0 (7.6–18.5)	0.57
Transcripts that accompany podcasts or videos	8.3 (4.9–13.9)	– <sup>e</sup>	
None	8.3 (5.1–13.3)	22.1 (15.5–30.3)	<0.001
Don't Know	11.4 (7.4–17.2)	13.4 (8.7–20.1)	0.59

NOTE: CI = Confidence interval; NCES = National Center for Education Statistics.

<sup>a</sup> School locale was categorized based on the NCES locale classification scheme into two categories: City/Suburb or Town/Rural.

<sup>b</sup> Weighted percentages and 95% CIs are presented. The prevalence of responses where the relative standard error was >30% for both categories of NCES locale are not presented. For school-based challenges this included: "Lack of personal protective equipment (e.g., masks, face shields)"; "Lack of suitable computer hardware and software technology to support students' remote learning (e.g., assistive technology tools, adaptive technology tools)". For accessible communication strategies, this included "American Sign Language" and "Braille".

<sup>c</sup> Chi-square tests were used to identify differences in prevalence of experiences and strategies by NCES locale.

<sup>d</sup> Question asked, "Since the start of the 2021–2022 school year, which of the following school-based challenges is your school experiencing in providing services and related supports or accommodations to students who receive special education services or students with underlying health conditions that place them at greater risk of severe illness and complications from COVID-19 (e.g., asthma, immunosuppression)?"

<sup>e</sup> Estimate was suppressed as the relative standard error was >30%.

<sup>f</sup> Question asked, "Since the start of the 2021–2022 school year, which of the following challenges related to students' home environment is your school experiencing in providing services and related supports or accommodations to students who receive special education services or students with underlying health conditions that place them at greater risk of severe illness and complications from COVID-19 (e.g., asthma, immunosuppression)?"

<sup>g</sup> Question asked, "Since the start of the COVID-19 pandemic, what types of accessible communication strategies has your school used with students or their families to prevent the spread of COVID-19?"

and difficulty in having students comply with COVID-19 prevention strategies that were implemented, while key home-based challenges included insufficient internet access, lack of learning partners, and low digital literacy among families. The benefits of in-person learning for students with disabilities or those with underlying health conditions extend beyond academics to include meals and extra-curricular activities.<sup>38</sup> However, these school- and home-based challenges underscore the importance of improving internet access and bolstering staffing support in schools, as well as improving communication with families to better support students at home when remote learning is utilized. Additionally, promoting the use of accessible communication strategies for COVID-19 and other infectious disease prevention is important, particularly in town/rural communities where low uptake of accessible communication strategies indicates need for more supports and resources to meet student needs. Improving accessibility of communication might increase reach of important messages during public health emergencies and support positive health and educational outcomes for students by enhancing access to materials and the usability of critical information provided.

## Acknowledgments

The authors would like to thank the school staff for their participation in the study and willingness to provide insights on COVID-19 prevention. Additionally, we acknowledge April Carswell, James Demery, Cherelle Dorleans, Adrian King, Leah Powell, Lynnea Roberts, India Rose, Syreeta Skelton-Wilson, Lorin Stewart, Dana Keener Mast, Lucas Godoy Garraza, Nicole Gonzalez, Christine Walrath, Lisa Barrios, Leah Robin, Carmen Ashley, Seraphine Pitt-Barnes, Michelle Carman-McClanahan, Nancy Brenner, Marci Hertz, and the rest of the National School COVID-19 Prevention Study team.

## Funding

This study is funded, in part, by task order 75D30121F10577 from the Centers for Disease Control and Prevention to ICF.

## Conflicts of interest

The authors declare no conflict of interest.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.dhjo.2022.101428>.

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